



PROGRAM OVERVIEW

Mechanical engineering offers interesting and challenging career opportunities in research, design development, manufacturing, testing and marketing for either private or government. As a mechanical engineer, you may work on products such as engines, transmissions, compressors, pumps, computer disk drives, CAD/CAE software, oil field drilling rigs, missiles, space satellites, earth moving equipment, container manufacturing machines and medical equipment.

Bachelor of Science (BS) in mechanical engineering curriculum begins with a strong emphasis on mathematics, physics and chemistry. It continues with a concentration in engineering sciences, including solid and fluid mechanics; thermodynamics, heat and mass transport; materials; and systems analysis and control. It concludes with laboratory and design courses which demonstrate the ways in which scientific knowledge is applied in the design and development of useful devices and manufacturing processes.

ACADEMIC ADVISING

Advising in the College of Engineering, Design and Computing (CEDC) depends on your student standing—undergraduate students either are pre-engineering or are admitted to the college, depending on degree progress. *Pre-engineering* students must meet Natalie Keller, Pre-Engineering Program Lead and Advisor (natalie.2.keller@ucdenver.edu) each semester before they can register for classes.

Mechanical engineering students must meet with one of the ME faculty advisors (mechanical@ucdenver.edu 303 315 7500) each semester before they can register for classes.

Students admitted to the College of Engineering and Applied Science (CEAS) who have declared a major are required to meet with an advisor in their specific department and should contact that department to schedule an appointment.

Students admitted to the College of Engineering and Applied Science who have not declared a major are required to meet with the CEDC advisor.

Mechanical Engineering

mechanical@ucdenver.edu

Visit the department website [here](#)

North Classroom 2024

303-315-7500

College of Engineering, Design and Computing

University of Colorado Denver

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GENERAL GRADUATION REQUIREMENTS & POLICIES

All CU Denver CEAS MECH students are required to complete the following minimum general graduation requirements:

1. Complete a minimum of 128 semester hours
2. Achieve a minimum 2.0 CU cumulative grade point average (GPA) and 2.0 minimum GPA in engineering coursework
3. Complete all college and major requirements
4. Residency: complete a minimum of 30 CEAS hours as a declared CEAS student in good standing at CU Denver
5. Terminal Residency: complete at least the final two semesters as an enrolled CEAS student

PROGRAM REQUIREMENTS & POLICIES

Students are responsible for meeting with the faculty advisor in their department to confirm major requirements. Students completing the Mechanical Engineering B.S. Degree are required to complete the following minimum program requirements:

1. Complete 24 semester hours of **CU Denver Core Curriculum coursework.**
2. Complete a minimum of 31 semester hours of **required mathematics and basic science courses with a grade of C- (2.0) or better in each course.**
3. Complete a minimum of 73 semester hours of **MECH core curriculum coursework, including 6 semester hours of elective coursework in an approved mechanical engineering track. All prerequisite courses must be completed with a grade of C- or better.**

| Courses | Credits | Notes |
|---|-----------|---|
| * Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. * | | |
| Required CU Denver Core Curriculum Coursework | 24 | CU Denver Core Curriculum |
| Required Mathematics and Basic Sciences Courses | 31 | |
| MATH1401 Calculus I | 4 | *Prerequisite: Placement; fulfills CORE Mathematics |
| MATH2411 Calculus II | 4 | *Prerequisite: C- or better in MATH1401 |
| MATH2421 Calculus III | 4 | *Prerequisite: C- or better in MATH2411 |
| MATH3195 Linear Algebra and Differential Equations | 4 | *Prerequisite: C- or better in MATH2411 |
| ENGR 1130 Engineering Chemistry with lab | 5 | *Prerequisite: High School chemistry or CHEM 1000 recommended |
| PHYS 2311 & 2321 General Physics I with lab | 5 | *Prerequisite: MATH1401 |
| PHYS 2331 & 2341 General Physics II with lab | 5 | *Prerequisite: PHYS 2311 and *Co-Requisite: MATH 2411 |
| Required Mechanical Engineering Courses | 67 | |
| MECH 1025 Mechanical Engineering Graphics and CAD | 3 | *Prerequisite: High School Geometry and Algebra |
| MECH 1045 Manufacturing Processes Design | 3 | *Prerequisite: MECH 1025 |
| ENGR 1100 Fundamentals of Computational Innovation | 3 | *Prerequisite: High School Geometry and Algebra |
| ENGR 1200 Fundamentals of Engineering Design Innovation | 3 | *Prerequisite: High School Geometry and Algebra |



| Required Mechanical Engineering Courses (Continued) | | |
|--|------------|--|
| MECH 2023 Statics | 3 | *Prerequisites: PHYS 2311 *Co-Requisite: MATH 2411 |
| MECH 2024 Introduction to Materials Science | 3 | *Prerequisite: ENGR 1130 |
| MECH 2033 Dynamics | 3 | *Prerequisite: MECH 2023 |
| MECH 2034 Properties of Engineering Materials Lab | 1 | *Co-Requisite: MECH 2024 |
| MECH 3010 Elementary Numerical Methods | 3 | *Co-Requisite: MATH 3195 or (MATH 3191 and MATH 3200) |
| MECH 3012 Thermodynamics I | 3 | *Prerequisites: MATH 1401 and PHYS 2311 |
| MECH 3021 Introduction to Fluid Mechanics | 3 | *Prerequisite: MECH 3012, MATH 2421 and MECH 2033 |
| MECH 3022 Thermodynamics II | 3 | * Prerequisite: MECH 3012 and MATH 2421 |
| MECH 3023 System Dynamics I: Vibrations | 3 | * Pre-requisites: MECH 2033, MECH 3010, *Co-Requisite: MECH 3043 |
| MECH 3027 Measurements | 3 | * Prerequisite: ELEC 3030 and MATH 3195 or (MATH 3191 and MATH 3200) |
| MECH 3028 Measurements Lab | 1 | * Co-Requisite: MECH 3027 |
| ELEC 3030 Electric Circuits and Systems | 3 | * Prerequisite: PHYS 2331 and MATH 2421 |
| MECH 3031 Fluids/Thermal Lab | 1 | *Co-Requisite: MECH 3021 |
| MECH 3032 Electric Circuits and Systems Lab | 1 | *Co-Requisite: ELEC 3030 |
| MECH 3035 Design of Mechanical Elements | 3 | *Prerequisite: MECH 3043 and MECH 2024 |
| MECH 3042 Heat Transfer | 3 | *Prerequisite:MECH3021 |
| MECH 3043 Strengths of Materials | 3 | *Prerequisite: MECH 2023 |
| MECH 4023 System Dynamics II: Controls | 3 | *Prerequisite: MECH 3023 |
| MECH 4035 Senior Design I | 3 | *Prerequisite: MECH 3035 and 40 hours of MECH courses |
| MECH 4045 Senior Design II | 3 | *Prerequisite: MECH 4035 |
| MECH 4142 Thermal Systems Design | 3 | *Prerequisite: MECH 3042 and MECH 3010 |
| MECH Technical Electives: choose two approved by your advisor mechanical engineering track electives; a minimum of three semester hours must be upper-division (3000- or 4000-level) and taught within the Department of Mechanical Engineering. | 6 | Check individual courses for prerequisites |
| Total Program Hours: | 128 | |

SAMPLE ACADEMIC PLAN OF STUDY

The following academic plan is a *sample* pathway to completing degree requirements for this major. Students should tailor this plan based on previously completed college coursework (e.g., AP, dual/concurrent enrollment, and transfer credit), course availability, and individual preferences related to course load, schedules, or add-on programs such as minors or double-majors. **Students deviating from this plan must fulfill course prerequisites and must meet with the faculty advisor in their department to confirm degree requirements.**

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|----------------------------|--|--|-------------------|---|---|
| Year One | Semester 1 | CRS | Semester 2 | CRS | |
| | MATH 1401: Calculus I | 4 | | MATH 2411: Calculus II | 4 |
| | ENGR 1130: Engineering General Chemistry | 5 | | PHYS 2311/PHYS 2321: General Physics I with Lab | 5 |
| | MECH 1025: Engineering Graphics and CAD | 3 | | MECH 1045: Manufacturing | 3 |
| | ENGL 1020: Core Composition I | 3 | | ENGL 2030: Core Composition II | 3 |
| | ENGR 1100 Fundamentals of Computational Innovation | 3 | | ENGR 1200 Fundamentals of Engineering Design Innovation | 3 |
| Year Two | Semester 3 | CRS | Semester 4 | CRS | |
| | MATH 2421: Calculus III | 4 | | MECH 2033: Dynamics | 3 |
| | MECH 2024: Materials Science | 3 | | MECH 2034: Properties of Materials Lab | 1 |
| | MECH 2023: Statics | 3 | | MECH 3012: Thermodynamics I | 3 |
| | PHYS 2331/ PHYS 2341: General Physics II w/Lab | 5 | | ELEC 3030/MECH 3032: Electric Circuits & Systems w/Lab | 4 |
| UCD Core Curriculum Course | 3 | MATH 3195: Linear Algebra and Differential Equations | 4 | | |
| Year Three | Semester 5 | CRS | Semester 6 | CRS | |
| | MECH 3010: Elem. Numerical Methods & Programming | 3 | | MECH 3022: Thermodynamics II | 3 |
| | MECH 3021/ MECH 3031 Fluid Mechanics w/Lab | 4 | | MECH 3023: System Dynamics I: Vibrations | 3 |
| | MECH 3027/MECH 3028: Measurements w/Lab | 4 | | MECH 3035: Design Of Mechanical Elements | 3 |
| | MECH 3043 Strength of Materials | 3 | | MECH 3042: Heat Transfer | 3 |
| UCD Core Curriculum Course | 3 | UCD Core Curriculum Course | 3 | | |
| Year Four | Semester 7 | CRS | Semester 8 | CRS | |
| | MECH 4023: System Dynamics II: s | 3 | | MECH 4045: Senior Design II | 3 |
| | MECH 4035: Senior Design I | 3 | | MECH Technical Elective | 3 |
| | MECH 4142: Thermal Systems Design | 3 | | MECH Technical Elective | 3 |
| | UCD Core Curriculum Course | 3 | | UCD Core Curriculum Course | 3 |
| UCD Core Curriculum Course | 3 | | | | |